

It is said that, whilst extracting venom from South African snakes, a fang is sometimes wrenched out of its socket but this must surely be the semi-ancylosed twin fang which not uncommonly occurs alongside the ancylosed fang and is presumed to replace it.

The existence of extra fangs in serial development remains a mystery and the likelihood of any of them revolving to replace the ancylosed fang so as to serve to emit poison through the one and only duct leading to the poison gland lacks experimental proof.

My own experience supports the claim that one can judge of the length of a snake and even help to determine the identity of a species by multiplying the length of one of its teeth. This would be most improbable if it were true that the teeth were constantly shed and replaced.

BRITANNIA BUILDINGS,
WEST STREET,
DURBAN, SOUTH AFRICA,
25th February, 1950.

F. GORDON CAWSTON
M.D., F.Z.S.

20.—A BIOMETRICAL STUDY OF *HILSA ILISHA* (HAM.) IN THE GODAVARI RIVER*

During this spawning migration the fish abstains from feeding. 1696 and 1943 specimens of male and female *Hilsa* collected from the river below the irrigation anicuts during the spawning season (July to October) of 1947 and 1948 were examined for total length, height and weight of body and for the number of rings found on scales of the pectoral region. The results are presented in tables I and II.

TABLE I

Showing relation between length, height, weight and number of rings of 1696 male Hilsa

Length in inches	Height in inches	Weight in oz.	No. of rings	No. of fish examined
11.1—12.0	4	14	1	10
12.1—13.0	4	16	1	10
13.1—14.0	—	—	—	—
14.1—15.0	4	24	2, 4 & 7	107
15.1—16.0	4.5	30	2, 4 & 6	978
16.1—17.0	4.8	39	1, 2, 3 & 4	512
17.1—18.0	5	45	6 & 7	79

* Communicated with the kind permission of the Director of Fisheries, Madras.

TABLE II

Showing relation between length, height, weight and number of rings of 1943 female *Hilsa*

Length in inches	Height in inches	Weight in oz.	No. of rings	No. of fish examined
15.1—16.0	5.5	32	2	32
16.1—17.0	5.9	46	2	214
17.1—18.0	6.0	58	2, 3 & 4	1114
18.1—19.0	6.1	68	4 & 8	489
19.1—20.0	6.6	78	2, 4 & 8	86
20.1—21.0	—	—	—	—
21.1—22.0	7.0	88	6	8

It will be seen from the tables that the majority of breeders fall under the 15–16 and 17–18 inches length groups. There is a uniform increase in the height and weight of the body, but there is no corresponding increase in the number of rings in the scales. The reason for the latter is briefly discussed below.

It is the contention of various workers on fish scale that for some species growth does not proceed uniformly, but that because of lack of food or because of injuries or other causes, growth takes place more slowly in winter than in summer^{2, 3}. Whenever there is less or no feeding, there is arrest in the growth of the fish, and this growth-check is left on the scale in the form of a circular band called 'ring'. In the anadromous *Hilsa*, this period of starvation coincides with the spawning act. During this period there is a general absorption of all the tissues of the body, the scale also being affected by the formation of a ring. A ring on the scale thus denotes a period of spawning; and from the number of rings present on a scale the number of times the fish had spawned may be determined. The youngest male of 11 inches length had one ring in its scales. This fish should have already spawned once, and had now entered the river for the second time. Similarly, the young female of 15 inches, having two rings on its scale, should have spawned twice and had come into the river for the third time. The maximum number of rings that is found is seven in male and eight in female; and it can be inferred that *Hilsa* spawns for the maximum of about eight times during its life. The age of the fish cannot however be definitely stated by a study of the rings unless it is ascertained by future investigations that a mature *Hilsa* breeds every year until its death.

FRESHWATER BIOLOGICAL STATION,
KILPAUK, MADRAS,
January, 1950.

P. I. CHACKO
B. KRISHNAMURTHY

REFERENCES

1. Chacko, P. I. and Ganapati, S. V. (1949) : *J. Madras Univ.*, 18 : 16–22.
2. Devanesan, D. W. (1945) : *Madras Fish. Bull.*, 28 : 1–38.
3. Parrott, A. W. (1934) : *New Zealand J. Sci. & Tech.*, 16 : 136–144.